1 INTRODUCTION

According to scientists throughout the world, human activities are increasing atmospheric greenhouse gas (greenhouse gas) concentrations. An expected result of these increased greenhouse gases is higher global temperatures, higher sea levels, and increased climatic variability, including changes in precipitation patterns and magnitudes. These changes may affect agriculture by making some crop and animal production operations difficult or infeasible in parts of the world, but possibly enhanced in others. Slowing the rate of emission losses will require efforts in most every sector of the economy, from all parts of the world. Agriculture and forestry can make important contributions to these efforts, and can benefit by doing so. Agricultural and forestry practices that sequester carbon or reduce or offset greenhouse emissions can increase landowner income, improve productivity, and result in improve related natural resource conditions, such as water quality and wildlife habitat.

The state of Idaho could play an important role in providing carbon dioxide offsets through carbon sequestration and/or related greenhouse gas emissions through voluntary carbon markets. State-level organization and guidance in the development of carbon markets will be essential for enabling agriculture and forestry to offset greenhouse gas sources if necessary and feasible. The circumstances surrounding climate change is a complicated and has many uncertainties that are not easily dealt with just from within this state. This report is intended to help the state of Idaho, not to address climate change, but understand carbon sequestration and how its participation carbon markets that can offset greenhouse gases that seem to be impacting climate change. The Idaho Soil Conservation Commission (ISCC) is dedicated to providing technical and financial support to Idaho agricultural in the wise use and enhancement of soil, water, and other related natural resources. Any activity that can be utilized to accomplish the SCC's and the state's objectives should be explored. Carbon sequestration markets, which in reality includes greenhouse gas emissions trading, should benefit Idaho's economy, landowner's productivity, and natural resources through the application of numerous conservation practices and related activities.

1.1 SENATE BILL 1379A – IDAHO LAW 22-5201

Initiated by Senate Bill 1379a, now Idaho Law 22-5201, the ISCC has prepared this report to present the complexities of carbon sequestration which can address climate change issues and benefit the state:

1. The potential for development of a system or systems of carbon emissions trading or markets for carbon sequestered on agricultural and forest land;
2. Agricultural and forestry practices, management systems or land uses which increase stored soil carbon;
3. Methods for measuring and modeling net carbon sequestration associated with various agricultural and forestry practices, management systems or land uses occurring on agricultural and forest lands and legislation, if any, to define and protect property rights in and attendant to carbon sequestration;
4. Areas of scientific uncertainty with respect to quantifying and understanding carbon sequestration associated with agricultural and forestry activities; and
5. Any recommendations of the carbon sequestration advisory committee developed pursuant to section 22-5103, Idaho Code.

A 16 member advisory committee, appointed by the Governor of Idaho, provided a comprehensive review and valuable guidance in the development of this report. Their primary responsibilities included:

1. Advise and assist the chairman of the soil conservation commission in preparing this report;

2. Recommend policies or programs to enhance the ability of Idaho agricultural and nonindustrial private forest landowners to participate in systems of carbon trading. Such recommendations shall include potential policies or programs designed to optimize economic benefits to agricultural producers and nonindustrial private forest landowners participating in carbon trading transactions. Such policies or programs may include, but are not limited to, identifying existing or the potential of creating nonprofit organizations or other public or private entities capable of serving as assemblers of carbon credits or as intermediaries on behalf of producers in carbon trading systems;
3. Encourage the production of educational and advisory materials regarding carbon sequestration on agricultural and forest lands and participation in systems of carbon or greenhouse emissions trading;
4. Identify and recommend areas of research needed to better understand and quantify the processes of carbon sequestration on agricultural and forest lands;
5. Research the development of a greenhouse gas inventory and a mitigation action for the state of Idaho and;
6. Review the carbon sequestration programs and policies of other states.

The information presented here in this can help Idaho prepare a practical and comprehensive plan for promoting carbon sequestration activities and other related greenhouse gas emissions reductions. A state-wide plan that encourages and provides guidance in carbon sequestration is needed prior to landowners and the state participating in carbon markets. There are many legal, scientific, social, and economic uncertainties that should be addressed and overcome first, before the state can enjoy the benefits of carbon markets.

This report will introduce the reader to the basic science of global warming, climate change, the related greenhouse gases, and the international, national, and state's political and physical position regarding climate change. Carbon sequestration and its potential to offset greenhouse gases will then be explored. Idaho's demographics will be briefly discussed to better understand the physical capability to sequester carbon and eventually provide greenhouse gas offsets within a carbon market. Numerous agriculture, forestry, livestock, and biofuels alternatives will be explored that landowners and other interests can adopt. The actual measurement, monitoring and verification methodology of carbon sequestration and related greenhouse gases will be explored. The typical characteristics of carbon markets and other supporting programs will then be presented. After presenting the numerous aspects of potential state-wide participation in carbon markets, the state-wide benefit is limitedly explored. The uncertainties related to many aspects of carbon markets are briefly discussed and then the Carbon Sequestration Advisory Committee presents some recommendations to the state of Idaho. Many supporting papers, data, and references are included at the end of this report.